

# How Utah Schools Compare TO THE NATION

USING THE IOWA TESTS OF BASIC SKILLS®

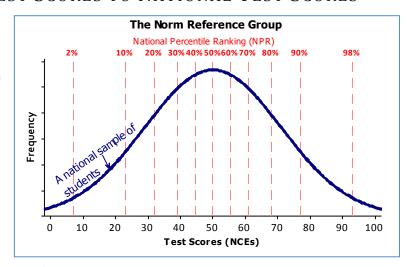
2008 FALL ADMINISTRATION STATEWIDE RESULTS (SCHOOL YEAR 2008-09)

## INTRODUCTION

Each year Utah students in the third, fifth, and eighth grades complete a national test known as the lowa Tests of Basic Skills to make comparisons against a nationally representative sample of students who took a similar test in 2005. This is referred to as a norm-referenced test<sup>1</sup>. Students are tested in five subjects: Reading, Language, Math, Social Studies, and Science. Results from all five subjects are aggregated into a "Total Composite" score. Results from three core subjects—Reading, Language, and Math—are aggregated into a "Core Total" score. Because the state scores have changed so little over the last three years, this report will focus on comparing Utah's test results to the nation by grade, subject, gender, ethnicity and other student groups, as well as by school and district.

## HOW TO COMPARE UTAH TEST SCORES TO NATIONAL TEST SCORES

A nationally representative sample of students provides the "Norm Reference Group." It is shown as a bell-shaped curve in the figure at right. The test scores, also known as NCEs<sup>2</sup>, are displayed on the horizontal or x axis. The national percentile ranking is equal to the area under the curve to the left of a test score, as shown in red. For example, a student who scores 77 is in the 90<sup>th</sup> percentile, meaning that he or she performed better than 90 percent of the national sample of students. The national percentile rank allows comparison of a student's test score or



a school's average test score to the national sample of students.

<sup>&</sup>lt;sup>1</sup> See Appendix for more detailed information.

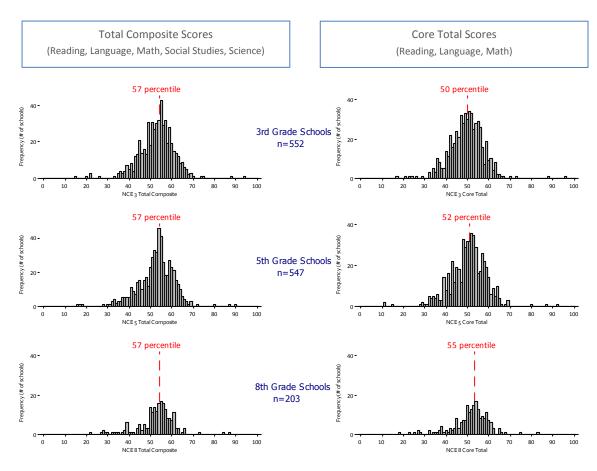
<sup>&</sup>lt;sup>2</sup> NCE is the abbreviation for "Normal Curve Equivalent of Average Standard Scores." NCEs are obtained by normalizing and standardizing the test scores of students in the reference group to obtain a mean of 50 and a standard deviation of 21.06. Because NCEs cover the same range as percentiles (1-99), the two are sometimes mistakenly interchanged. While NCEs are linked to percentiles, as shown above, only NCEs can be averaged when aggregating, and percentiles can then be determined. (It is not valid to average percentiles.)



# OVERALL, UTAH IS IN THE $57^{\text{TH}}$ PERCENTILE OF THE NATION

In Utah, 552 schools tested third grade students, 547 schools tested fifth grade students, and 203 schools tested eighth grade students. The distributions below show the frequency of average school NCE test scores for each grade. The red line is drawn at the state-wide NCE average<sup>3</sup> and is labeled with its corresponding national percentile. Notice that the state-wide average of the Total Composite Scores (for Reading, Language, Math, Social Studies, and Science) is the same for each grade, and corresponds to the 57<sup>th</sup> national percentile.

The percentile rank decreases for the Core Total Scores (Reading, Language, and Math). This implies that Utah schools perform better in Social Studies and Science than they do in Core Subjects overall. The results for individual subjects by grade are shown on the next two pages.



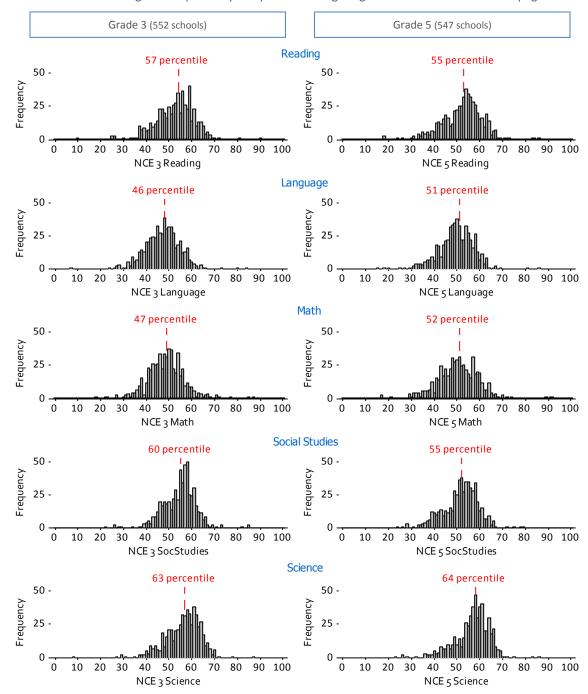
<sup>&</sup>lt;sup>3</sup> The state-wide NCE average is weighted appropriately with the number of students in each school.



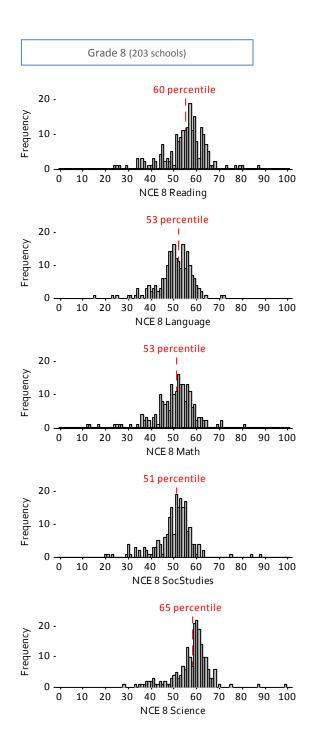
# UTAH SCHOOLS PERFORM WELL IN SCIENCE

#### COMPARING UTAH SCORES TO THE NATION BY SUBJECT AND GRADE

The frequencies of the average school NCE test scores are shown below by subject and by grade. The shapes—and the state-wide average and its corresponding percentile—shift left or right depending on the subject and grade. For example, the shape for Science scores is shifted over to the right and corresponds to higher percentile ranks of 63 and 64 for third and fifth grade respectively. Graphs for the eighth grade are shown on the next page.









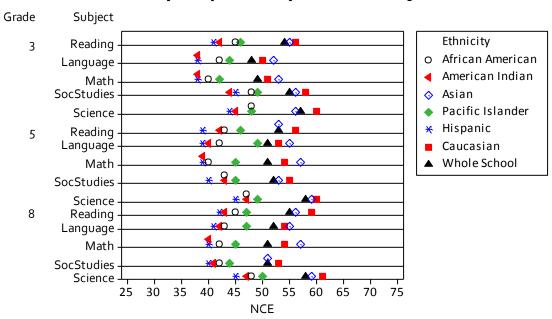
## COMPARING UTAH STUDENT GROUPS

Utah students can be grouped by ethnicity (African American, American Indian, Asian, Pacific Islander, Hispanic, Caucasian) and other demographics (economically disadvantaged, English language learner, migrant, students with disabilities). The plot below compares ethnic groups. The plot on page six compares gender, and the plot on page seven compares additional student groups. The "whole school" is included to compare the student groups to the overall average. Approximate national percentiles can be found on the first page of this report. Exact national percentile ranks and n-sizes for each student group can be found in the data tables<sup>4</sup>.

#### COMPARING UTAH STUDENT ETHNICITY GROUPS BY SUBJECT AND GRADE

The plot below shows the average student test scores by grade, subject, and ethnicity. The patterns in ethnicity are fairly consistent across grades and subjects. Only Caucasians and Asians regularly score above the 50<sup>th</sup> percentile, and do particularly well in Science. For example, the average eighth grade Caucasian score is about 62 in Science, which corresponds approximately to the 70<sup>th</sup> percentile (found on the first page.)

### **Ethnicity Comparisons by Grade and Subject**



<sup>&</sup>lt;sup>4</sup> http://www.schools.utah.gov/assessment/Documents/Results\_Iowa\_State\_20090210.xls



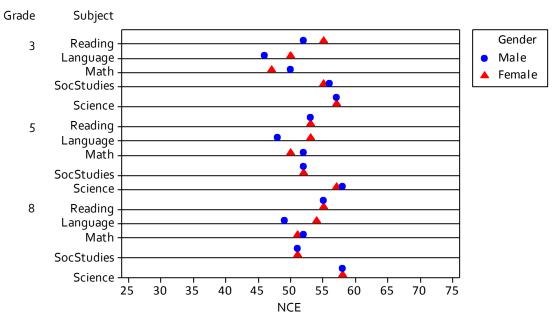
## DO UTAH GIRLS OR BOYS SCORE BETTER?

The answer is: It depends! Girls score higher than boys in some subjects, especially Language in all grades. Boys score higher than girls for some subjects, especially Math in the third and fifth grades. Girls and boys score about the same for Social Studies and Science.

#### COMPARING UTAH BOYS AND GIRLS TO THE NATION BY SUBJECT AND GRADE

The plot below shows average student test scores by grade, subject, and gender for easy visual comparison. Approximate percentiles can be found on the first page of this report. For example, eighth grade girls and boys scored about 58 in Science, which corresponds to the 65<sup>th</sup> percentile. Exact scores, percentiles, and n-sizes are given in the data table posted on the website<sup>5</sup>.

## **Gender Comparisons by Grade and Subject**



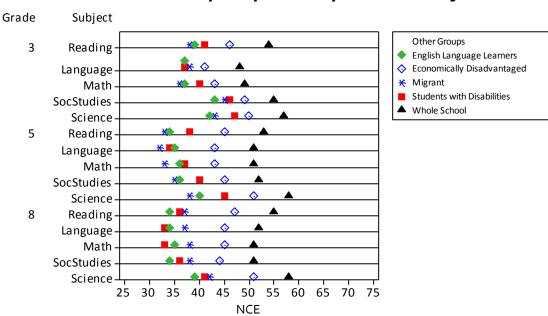
 $<sup>^{5}\</sup> http://www.schools.utah.gov/assessment/Documents/Results\_lowa\_State\_20090210.xls$ 



#### COMPARING MORE UTAH STUDENT GROUPS BY SUBJECT AND GRADE

The plot below shows the average Utah student test score by grade and subject and four other student groups (economically disadvantaged, English language learners, migrant, and students with disabilities). Third grade students in some of these groups scored better than fifth or eighth grade students, particularly in Social Studies and Science. Some of these groups averaged a score of about 35, which corresponds approximately to the 25<sup>th</sup> percentile (as seen on the first page). Exact n-sizes and percentiles can be found in the data tables<sup>6</sup>.

## More Student Group Comparisons by Grade and Subject



<sup>&</sup>lt;sup>6</sup> http://www.schools.utah.gov/assessment/Documents/Results\_Iowa\_State\_20090210.xls



## COMPARING UTAH SCHOOLS AND DISTRICTS TO THE NATION

A visual display of average student test scores for each school and district<sup>7</sup> are shown on the next three pages, with one page for each grade (third, fifth, and eighth). These plots enable you to make a variety of comparisons—how schools vary within a district, how districts vary from each other, how schools and districts vary by subject and grade, and how each of these compares to the nation—by locating the approximate national percentile rankings on the first page of this report. Exact percentiles and n-sizes can be found in the data tables.<sup>8</sup> If fewer than ten test scores were reported for a particular school/subject/grade, the information did not meet the reporting criteria and is not shown in the plots or in the data table. Plots for four of the five subjects (Reading, Language, Math, and Science) are presented. Data for Social Studies by school and district can be found in the data tables.

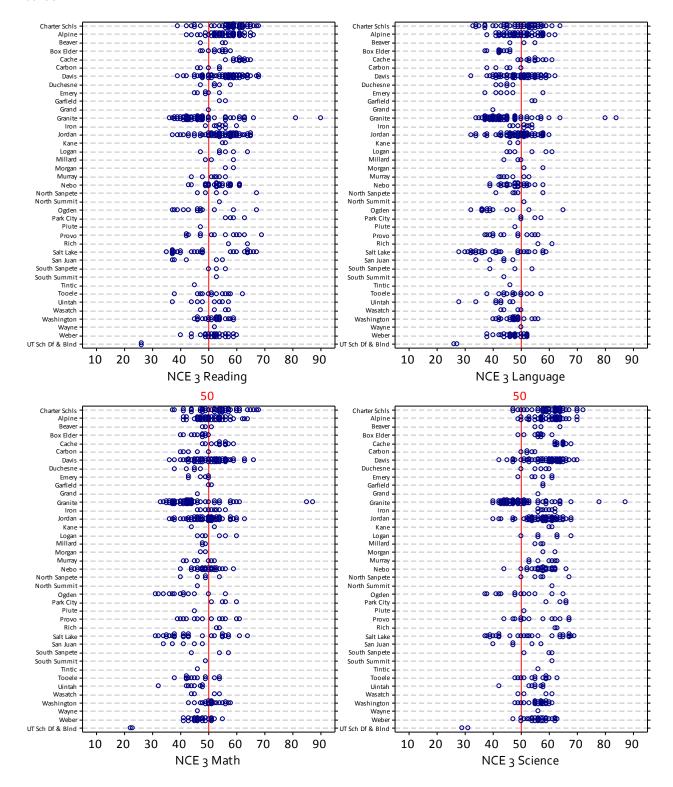
<sup>&</sup>lt;sup>7</sup> Two districts, Juab and Sevier, did not administer the Iowa Tests of Basic Skills, and therefore are not shown on the plots or in the data tables.

<sup>&</sup>lt;sup>8</sup> http://www.schools.utah.gov/assessment/Documents/Results\_Iowa\_State\_20090210.xls



#### COMPARING SCHOOLS AND DISTRICTS FOR THIRD GRADE TESTS BY SUBJECT

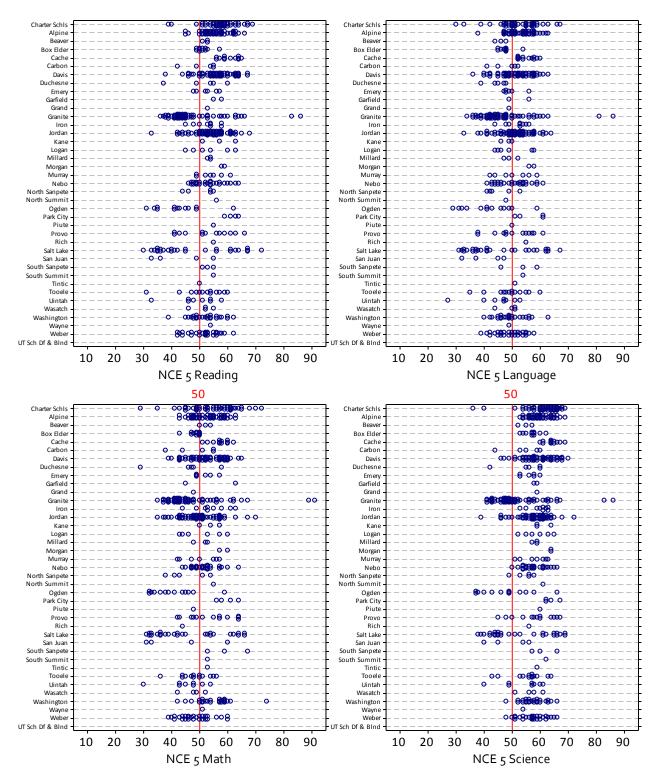
Each circle symbol represents one school, or the average score of all students tested for that grade, subject, and school.





#### COMPARING SCHOOLS AND DISTRICTS FOR FIFTH GRADE TESTS BY SUBJECT

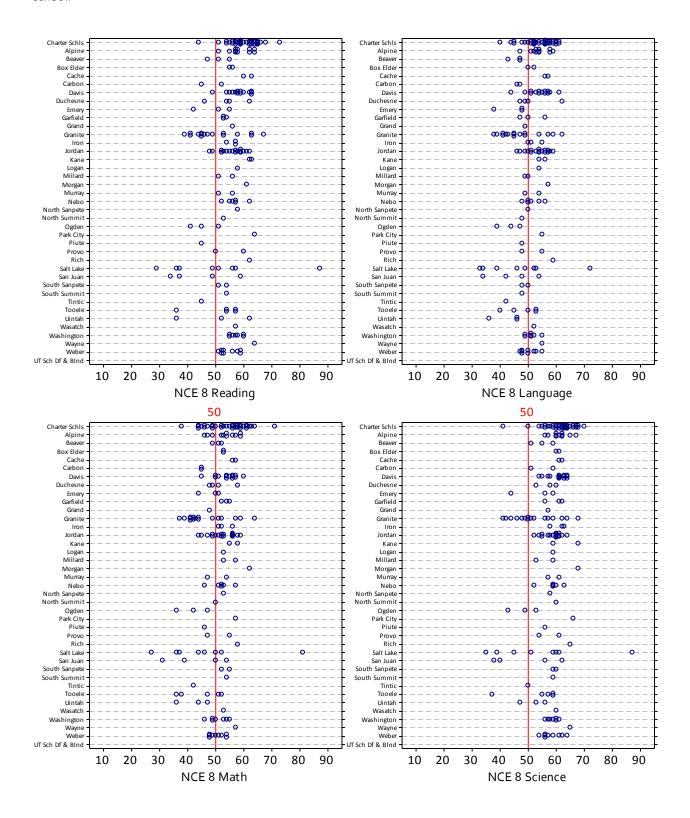
Each circle symbol represents one school, or the average score of all students tested for that grade, subject, and school.





#### COMPARING SCHOOLS AND DISTRICTS FOR EIGHTH GRADE TESTS BY SUBJECT

Each circle symbol represents one school, or the average score of all students tested for that grade, subject, and school.





## APPENDIX: MORE ABOUT THE IOWA TESTS OF BASIC SKILLS

The lowa Tests of Basic Skills are norm-referenced tests (NRTs) administered to Utah public school students enrolled in grades three, five, and eight in the autumn of the 2008-2009 school year. Utah statute requires the administration of norm-referenced tests to Utah students. These tests are considered an important element of the Utah Performance Assessment System for Students (U-PASS), and provide an external look at student achievement at the student, grade, school, district and state levels.

The Iowa Tests of Basic Skills are published by the Riverside Publishing Company and developed by the faculty and professional staff at the University of Iowa. They measure academic achievement in Reading, Language, Math, Social Studies, and Science for kindergarten through grade eight. The Iowa Tests of Basic Skills provide an achievement comparison to a national reference group comprised of students in the same grades from a diverse and nationally representative group of students.

Schools included in the national norming sample were selected on the basis of school district size, region of the country, race and ethnicity, and socioeconomic category. Three types of schools are included in the national norms: public schools, Catholic schools, and private (non-Catholic) schools. Care was taken to include students with disabilities and English language learners. Schools selected to participate in the national norming sample represent the broad characteristics of schools throughout the nation.

National student achievement is dynamic and can change over time. It is important that a norm-referenced test provide the most current, empirically observed trends in student achievement, by grade and content area as well as by subgroup within the larger population. Riverside Publishing provides updated national norms for the Iowa Tests approximately every four or five years. This year is the third administration of the lowa Tests of Basic Skills using the 2005 national norms; therefore, three years' worth of data can be compared (Fall 2006, 2007, and 2008).

#### INTERESTING NOTES:

- On a norm-referenced test, the **50**<sup>th</sup> **percentile** represents the national average.
- The percentile rankings in this report are based on the most recent national norm, established in 2005.
- The lowa Tests of Basic Skills have been administered in Utah public schools for five school years: Fall 2004 and 2005 (using older 2000 norms) and Fall 2006, 2007 and 2008 (using recent 2005 norms). It is not statistically valid to formally compare results between the old norms and the new norms.
- The Iowa Tests of Basic Skills are designed to reflect commonly accepted goals of instruction (content standards) at the national level. The tests are not specifically aligned with the Utah Core Curriculum; consequently, Utah's Criterion-Referenced Tests (CRTs) remain the best measure of the mastery of the Utah Core Curriculum. Although the content of the Iowa Tests of Basic Skills has significant overlap with the Utah Core Curriculum, different knowledge emphasis exists in some content areas.
- The percentile rank provides a direct comparison to the achievement of students in the national reference group. For example, a student's NCE test score of 77 corresponds to the 90<sup>th</sup> percentile rank, meaning the student scored higher than 90 percent of the students in the national sample.
- The percentile rank should not be confused with the *percent correct*.
- Percentile ranks cannot be averaged. However, NCE test scores can be averaged, and corresponding percentile ranks can then be found. For a more detailed explanation, please see http://www.schools.utah.gov/assessment/Documents/Iowa Technical Questions ITBS.pdf.